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TRADE

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

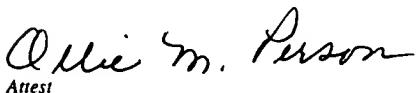
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Attest



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United States Patent [19]

Yonemitsu et al.

[11] Patent Number: 5,793,779

[45] Date of Patent: Aug. 11, 1998

[54] OPTICAL DISK AND METHOD AND APPARATUS FOR RECORDING AND THEN PLAYING INFORMATION BACK FROM THAT DISK

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[73] Assignee: Sony Corporation, Tokyo, Japan

[21] Appl. No.: 457,844

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Related U.S. Application Data

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Foreign Application Priority Data

Mar. 19, 1994 [JP] Japan 6-07444

[51] Int. Cl. ⁶ G11B 20/18

[52] U.S. Cl. 371/402; 371/374

[58] Field of Search 371/37.1, 37.5, 371/37.4, 40.1

References Cited

U.S. PATENT DOCUMENTS

Re. 31,666	9/1984	Doi et al.	371/43
4,348,659	9/1982	Fujimori et al.	340/347 AD
4,413,340	11/1983	Odaka et al.	371/38.1
4,476,562	10/1984	Sako et al.	371/37.5
4,499,454	2/1985	Shimada	340/347 DD
4,833,471	5/1989	Tokuuume et al.	341/67
5,065,388	11/1991	Roth et al.	369/47
5,198,813	3/1993	Isozaki	341/59
5,239,531	8/1993	Abe	369/109
5,243,588	9/1993	Maeda et al.	369/54
5,276,674	1/1994	Tanaka	369/275.3
5,282,192	1/1994	Yamada et al.	369/279.3
5,315,400	5/1994	Kurata et al.	358/355
5,325,352	6/1994	Matsumoto	369/275.1
5,351,132	9/1994	Sawabe et al.	358/342
5,353,277	10/1994	Yasuda et al.	369/275.4
5,357,494	10/1994	Aratani	369/13
5,371,602	12/1994	Tsoboi et al.	358/335
5,377,178	12/1994	Saito et al.	369/124

5,388,093	2/1995	Yoshida et al.	369/124
5,426,624	6/1995	Goto	369/32
5,428,598	6/1995	Veldhuis et al.	369/275.3
5,434,829	7/1995	Maeda et al.	369/48
5,446,714	8/1995	Yoshio et al.	369/48
5,455,684	10/1995	Funjimami et al.	358/335
5,463,565	10/1995	Cookson et al.	364/514 R
5,471,606	11/1995	Huang et al.	395/500
5,477,525	12/1995	Okabe	369/275.3
5,493,558	2/1996	Kihara	369/275.2
5,506,823	4/1996	Sanada	369/48

OTHER PUBLICATIONS

French, "Alternative Modulation Codes for the Compact Disc", IEEE Transactions on Consumer Electronics, vol. 34, No. 4, Nov. 1988, pp. 908-913 Nov. 1988.

Saito et al., "Demonstration of High Data Density Recording on Direct Overwrite Magneto-Optical Disk", IEEE Transactions on Magnetics, vol. 28, No. 5, Sep. 1992, pp. 2512-2514 Dec. 1992.

Yoshimura, S., et al., "Large-Capacity Magneto-Optical Disk System Using Magnetically Induced Super Resolution", IEEE Transactions on Consumer Electronics, vol. 38, No. 3, pp. 660-665 Aug. 1992.

J. van der Meer, 'The Full Motion System for CD-I', IEEE Transactions on Consumer Electronics, vol. 38, No. 4, pp. 910-922 Nov. 1992.

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[57]

ABSTRACT

An optical disk having a diameter less than 140 mm and a thickness of $1.2 \text{ mm} \pm 0.1 \text{ mm}$, with a plurality of record tracks having data recorded thereon as embossed pits representing information and exhibiting a track pitch in the range between $0.646 \mu\text{m}$ and $1.05 \mu\text{m}$; with the tracks being divided into a lead-in area, a program area and a lead-out area. The data includes table of contents (TOC) information recorded in a plurality of sectors in at least one TOC track and user information recorded in a plurality of sectors in user tracks; with the TOC information including addresses of start sectors recorded in the user tracks. The data (both user and TOC information) is encoded in a long distance error correction code having at least eight parity symbols, and is run length limited (RLL) modulated.

64 Claims, 29 Drawing Sheets

